

**VERSION WITH MARKINGS TO SHOW CHANGES MADE****IN THE SPECIFICATION:**

Specification at page 1, line 1:

- 1                    This application is the U.S. national phase application of PCT  
2                    International Application No. PCT/FR00/02723 filed 2 October 2000.

**IN THE CLAIMS:**

What is Claimed:

- 1                    1.        (Amended) A dental handpiece for driving continuous  
2                    rotation of a dental tool, said handpiece including a drive shaft ~~(5)~~ mounted to  
3                    rotate in a longitudinal bore ~~(2)~~ of the handpiece and made up of a primary shaft  
4                    ~~(50)~~ and a secondary shaft ~~(51)~~ which are coaxial, coupled together in series by  
5                    torque limiter means ~~(52)~~ for limiting the maximum torque that can be  
6                    transmitted, and provided with means for adjusting said maximum torque that  
7                    can be transmitted, ~~characterized in that~~ the torque limiter means ~~include~~  
8                    including:  
9                           -- a male coupling portion constrained to rotate with the first shaft  
10                    of the pair of shafts comprising the primary shaft ~~(50)~~ and secondary shaft ~~(51)~~,  
11                    and having a coaxial annular outside surface ~~(150)~~,  
12                           -- a female coupling portion ~~(9)~~ constrained to rotate with the  
13                    second shaft of the pair of shafts comprising the primary shaft ~~(50)~~ and the

14 secondary shaft ~~(51)~~, and having a coaxial annular inside surface ~~(151)~~  
15 overlapping the coaxial annular outside surface ~~(150)~~ of the male coupling  
16 portion,

17 -- a series of coupling cavities ~~(23a, 23b)~~ distributed annularly  
18 over the coaxial annular surface ~~(151)~~ of the first coupling portion of the pair of  
19 coupling portions comprising the male and female coupling portions,

20 -- at least one rotary coupling member ~~(15a, 15b)~~ with a parallel  
21 rotation axis, mounted to slide radially in a transverse passage ~~(14a, 14b)~~ of the  
22 second coupling portion of the pair of coupling portions comprising the male and  
23 female coupling portions, and spring-loaded by spring means ~~(17)~~ toward the  
24 coaxial annular surface ~~(151)~~ of the first coupling portion of the pair of coupling  
25 portions comprising the male and female coupling portions so as to be partially  
26 engaged in said coupling cavities ~~(23a, 23b)~~ whilst remaining guided in said  
27 transverse passage ~~(14a, 14b)~~,

28 -- means ~~(24-26)~~ accessible by the user for voluntary adjustment of  
29 the maximum torque that can be transmitted.

1 2. (Amended) A dental handpiece according to claim 1,  
2 ~~characterized in that~~ wherein it includes at least two rotary coupling members  
3 ~~(15a, 15b)~~ mounted to slide radially in respective transverse passages ~~(14a, 14b)~~  
4 regularly distributed around the longitudinal axis ~~(1-1)~~ to balance the radial forces  
5 of the rotary coupling members between the male and female coupling portions.

1                   3.     (Amended) A dental handpiece according to ~~either~~ claim 1  
2 ~~or claim 2, characterized in that~~ wherein the rotary coupling member(s) are/is  
3 coupling balls ~~(15a, 15b)~~.

1                   4.     (Amended) A dental handpiece according to ~~any of claims 1~~  
2 ~~to 3 claim 1, characterized in that~~ wherein the rotary coupling member(s) ~~(15a,~~  
3 ~~15b)~~ are/is mounted to slide radially in a respective transverse passage ~~(14a,~~  
4 ~~14b)~~ in the male coupling portion ~~(50)~~, and the coupling cavities ~~(23a, 23b)~~ are  
5 distributed annularly over the coaxial annular surface ~~(151)~~ of the female  
6 coupling portion ~~(9)~~.

1                   5.     (Amended) A dental handpiece according to ~~any of claims 1~~  
2 ~~to 4 claim 1, characterized in that~~ wherein it includes means ~~(20-22)~~ for  
3 adjusting the force of the spring means ~~(17)~~ spring-loading the rotary coupling  
4 member(s) ~~(15a, 15b)~~.

1                   6.     (Amended) A dental handpiece according to ~~any of claims 1~~  
2 ~~to 5 claim 1, characterized in that~~ wherein:

3                   -- the coupling cavities ~~(23a, 23b)~~ are longitudinal grooves with a  
4 circular arc-shaped cross section and a depth varying in the longitudinal  
5 direction,

6                   -- relative longitudinal position adjustment means ~~(24-26)~~  
7 accessible to the user are provided for adjusting the relative longitudinal position  
8 of the male coupling portion ~~(50)~~ in the female coupling portion ~~(9)~~,

9                   so that the rotary coupling member(s) ~~(15a, 15b)~~ engage(s) in  
10 deeper or shallower portions of the coupling cavities ~~(23a, 23b)~~ as a function of

11 the chosen relative longitudinal position, which determines the maximum torque  
12 that can be transmitted.

1 7. (Amended) A dental handpiece according to ~~any of claims 1~~  
2 ~~to 6~~ claim 1, ~~characterized in that~~ wherein the transverse channels ~~(14a, 14b)~~ are  
3 oriented in radial directions.

1 8. (Amended) A dental handpiece according to ~~any of claims 1~~  
2 ~~to 6~~ claim 1, ~~characterized in that~~ wherein the transverse passage(s) ~~(14a, 14b)~~  
3 are/is oriented obliquely to the radial directions.

1 9. (Amended) A dental handpiece according to ~~any of claims 1~~  
2 ~~to 8~~ claim 1, ~~characterized in that~~ wherein:

3 -- the male coupling portion is constituted by the distal end of the  
4 primary shaft ~~(50)~~,

5 -- the female coupling portion is a coupling ring ~~(9)~~ mounted to  
6 overlap the adjacent ends of the primary shaft ~~(50)~~ and the secondary shaft ~~(51)~~,  
7 and coupled to the secondary shaft by rotation-preventing means ~~(8a, 8b, 53)~~,

8 -- the distal end of the primary shaft ~~(50)~~ includes transverse  
9 passages ~~(14a, 14b)~~ for guiding coupling balls ~~(15a, 15b)~~,

10 -- the distal end of the primary shaft ~~(50)~~ includes an axial bore  
11 ~~(16)~~ into which the transverse passages ~~(14a, 14b)~~ open,

12 -- a bearing portion ~~(18)~~ is mounted to slide axially in said axial  
13 bore ~~(16)~~ and has a frustoconical part ~~(19)~~ in contact with the coupling balls  
14 ~~(15a, 15b)~~ to urge them radially outward,

15                   -- a compression spring ~~(17)~~ is engaged axially between the  
16 bearing member ~~(18)~~ and a calibration screw ~~(21)~~ itself functionally engaged in a  
17 screwthreaded section of the axial bore ~~(20)~~.

1                   10. (Amended) A dental tool according to claim 9,  
2 ~~characterized in that~~ wherein:

3                   -- the coupling ring ~~(9)~~ is slidably mounted on the proximal end of  
4 the secondary shaft ~~(51)~~, and includes coupling cavities ~~(23a, 23b)~~ in the form of  
5 longitudinal grooves whose depth varies in the longitudinal direction,

6                   -- the coupling ring ~~(9)~~ is freely rotatable and is constrained to  
7 move in axial translation with an adjuster ring ~~(25)~~ itself slidably mounted on the  
8 handpiece body to be directly accessible to the user.

1                   11. (Amended) A dental tool according to ~~any of claims 1 to 10~~  
2 claim 1, including a main handpiece body, a handpiece neck ~~(1)~~ and a handpiece  
3 head ~~(30)~~, ~~characterized in that~~ wherein the torque-limiter means ~~(52)~~ are housed  
4 in the neck ~~(1)~~ of the handpiece.